REMARKS

Claims 1-19 and 21-24 are pending. Claims 1 and 19 have been amended. The amendment is supported by Figures 2 and 3 and para. [0034] of applicants' specification. No new matter has been added.

Claims 1, 19, 23 and 24 are rejected under 35 USC 103(a) as being unpatentable over Melzner, U.S. Patent No. 6,151,752, in view of Downham, U.S. Patent No. 5,345,650. This rejection is respectfully traversed.

Claim 1 recites "a turbine air inlet, separate from the suction inlet, admitting air separately from air admitted by the suction inlet to the first turbine." This feature is not disclosed or suggested by the combination of Melzner and Downham.

The Examiner admits that Melzner does not disclose this feature, but contends that Downham overcomes this deficiency. The Examiner contends that Downham teaches that "it is desirable to provide a separate air inlet for the turbine that admits air separate from the suction air inlet so that air having dirt and debris will not pass through the turbine." Applicants respectfully disagree.

Initially, the Examiner fails to meet his burden to establish a *prima facie* case of obviousness under MPEP 2141. The Examiner does not cite any specific teachings of Downham to support this rejection. It is thus unclear to applicants what portion of Downham's device is being alleged to correspond to the claimed turbine air inlet. Should the Examiner disagree with applicants' remarks below, the Examiner is respectfully requested to issue another non-final office action in compliance with MPEP 2141 to afford the applicants with a fair opportunity to respond.

Downham does not disclose or suggest "a turbine air inlet, separate from the suction inlet, admitting air separately from air admitted by the suction inlet to the first turbine", as recited in claim 1. The turbine in Downham's device is located downstream from the suction opening 27 and does not include a separate air inlet. The air flowing into the turbine is the air

drawn in through the suction opening 27 and is not drawn separately from the air admitted by the suction opening 27. Specifically, as described in col. 3, lines 43-53 of Downham:

> In operation, air is drawn through a suction opening 27 into the vacuum chamber 22, past the beater 20 which when rotating, operates to release dust from the floor surface. The air is drawn into the filter and bag system so that the dust and debris from the floor is deposited in the bag. The air then passes through the fan housing and is exhausted through the duct 10, the turbine 14 and thence to the atmosphere through an aperture 23.

Contrary to the claimed invention, the turbine 14 of Downham's device is located downstream from the suction opening 27 and receives air flowing through the suction opening 27. In fact, with respect to the arrangement of the turbine, Downham differs from Melzner only in that the device of Downham includes a filter and bad system in the airway between the suction opening and the turbine. Downham therefore does not overcome the failure of Melzner to teach this feature.

Furthermore, amended claim 1 recites "a control moveable to control the amount of air admitted by the turbine air inlet to the first turbine so as to prevent rotation or reduce the speed of rotation of the agitator, the control moving in response to the speed of rotation of the first turbine or to a flow of air to or through the first turbine." This feature is not disclosed or suggested by the combination of Melzner and Downham. By way of illustration, as depicted in Figs. 2 and 3 of applicants' specification, as the control 200 moves from an open position to a closed position, the gap in turbine air inlet 232 narrows, thus controlling the amount of air admitted by the turbine air inlet 232 into the turbine. As discussed in para. [0034] of the specification, the control 200 moves to the closed position when, for example, the speed of rotation of the first turbine increases to a predetermined level.

Melzner discloses a control that controls the lateral position of the turbine relative to the turbine air inlet, rather than the amount of air admitted by the turbine air inlet, as claimed. Specifically, when the load on the brush bar in Melzner's device is reduced by, e.g., lifting the cleaner head off the floor, the control mechanism laterally moves the turbine 3 from a first

position in the path of the inlet 12 air flow (e.g., upper portion of Fig. 2) to a second position that is less exposed to the inlet 12 air flow (e.g., lower portion of Fig. 2). Melzner, col. 4, line 62 to col. 5, line 9. Regardless of the position of the turbine relative to the inlet 12, the amount of air admitted by the turbine air inlet 12 to the turbine remains constant. The control mechanism in Melzner therefore does not control the amount of air admitted by the turbine air inlet as recited in applicants' claim 1.

Downham also fails to disclose "a control moveable to control the amount of air admitted by the turbine air inlet to the first turbine so as to prevent rotation or reduce the speed of rotation of the agitator, the control moving in response to the speed of rotation of the first turbine or to a flow of air to or through the first turbine," as recited in claim 1. As conceded by the Examiner, Downham discloses a gravity flap 28 that does not move in response to the speed of rotation of the first turbine or to a flow of air to or through the first turbine.

Consequently, neither Melzner nor Downham, alone or in combination, discloses or suggests the control recited in claim 1. Claim 1 is therefore allowable. Claim 19 recites features that are substantially similar to the features of claim 1 discussed above. Claim 19 is thus similarly allowable. Claims 23 and 24 depend from claim 19 and are allowable for at least the same reasons.

Claims 1-8, 13, 14 and 19-24 are rejected under 35 USC 103(a) as being unpatentable over Downham in view of Woerwag, DE4229030. This rejection is respectfully traversed.

As discussed above, Downham fails to disclose or suggest the claimed "turbine air inlet, separate from the suction inlet, admitting air separately from air admitted by the suction inlet to the first turbine," as recited in claim 1. See *supra*, page 5. Woerwag does not overcome this deficiency, nor has the Examiner cited Woerwag for this purpose. As shown in Figs. 1 and 7 of Woerwag, air flows into the device through the suction opening 14 and then flows through the opening 70 into the turbine 15. Woerwag does not disclose a separate air inlet as recited in

claim 1. The combination of Downham and Woerwag therefore fails to disclose or suggest this feature.

Additionally, claim 1 recites ""a control moveable to control the amount of air admitted by the turbine air inlet to the first turbine so as to prevent rotation or reduce the speed of rotation of the agitator, the control moving in response to the speed of rotation of the first turbine or to a flow of air to or through the first turbine." The Examiner concedes that Downham does not disclose this feature, but instead relies on Figs. 7 and 8 of Woerwag. However, for the reasons discussed below, the configuration disclosed in Figs. 7 and 8 of Woerwag would not work in the manner recited in claim 1.

Bernoulli's principle states that an increase in the speed of a fluid occurs simultaneously with a decrease in pressure or a decrease in the fluid's potential energy. The total pressure of a fluid through a duct is the sum of the static pressure and the dynamic pressure. The dynamic pressure is proportional to the square of the speed of the fluid. Consequently, as the speed of the fluid increases, the dynamic pressure increases and the static pressure decreases.

When the cleaner head of Woerwag is placed on the floor, there is a flow of dirty air through the cleaner head. Since the airflow below the flap is moving, the static pressure below the flap is lower than that above the flap. However, the biasing force of the spring prevents the flap from closing. When the cleaner head is on the floor surface, the suction inlet is obstructed and thus the flow of air through the cleaner head is restricted. When the cleaner head is lifted off the floor, the suction inlet is unobstructed and the flow of air through the cleaner head increases. However, the increase in airflow arises by virtue of the increase in suction opening and not by an increase in the speed of the airflow. Indeed, since the motor applies the same suction force but is now pulling more air through the cleaner head, the speed of the airflow actually decreases. Since the speed of the airflow decreases, the dynamic pressure decreases and thus the static pressure increases. The static pressure beneath the flap therefore increases rather than decreases upon lifting the cleaner head. However, in order for the flap to move to

the closed position, the static pressure beneath the flap must decrease. The flap would not therefore close upon lifting the cleaner head. Indeed, the flap is more likely to close when the cleaner head is placed on the floor, which is clearly undesired.

Even assuming that the flap is somehow moved to the closed position, returning the cleaner head to the floor will not reopen the flap. In the closed position, the suction force applied by the motor creates a partial vacuum on the right-hand side of the flap. However, the left-hand side of the flap is at ambient pressure by virtue of the suction inlet. So a pressure difference is established that retains the flap in the closed position. Woerwag suggests that when the cleaner head is returned to the floor, the flap will return to the open position. However, simply returning the cleaner head to the floor will not remove the pressure difference. The only way to return the flap to the open position would be to switch off the motor so as to remove the suction force on the right-hand side of the flap.

For these reasons, one of ordinary skill in the art would have realized that Figs. 7 and 8 of Woerwag are inoperable. Accordingly, a person of ordinary skill in the art would have recognized that incorporating the teachings of Woerwag into the device of Downham would have rendered the device of Downham unusable and unsatisfactory for its intended use. Therefore, a person of ordinary skill in the art would not have combined the teachings of Downham and Woerwag, as suggested by the Examiner.

Claim 1 is allowable for these reasons. Claim 19 recites features that are similar to the features of claim 1 discussed above. Claim 19 is thus similarly allowable. Claims 2-8, 13, 14 and 10-24 depend from an allowable claim and are allowable for at least the same reasons.

Claims 9-12 and 15-18 are rejected under 35 USC 103(a) as being unpatentable over Downham in view of Woerwag in view of various other references. These rejections are respectfully traversed. Claims 9, 12 and 15-18 depend from claim 1. None of the cited references overcome the deficiencies of Downham and Woerwag discussed above, nor were they cited by the Examiner as doing so. Accordingly, claims 9, 12 and 15-18 are allowable.

Applicants thank the Examiner for indicating that claims 10 and 11 include patentable subject matter. In light of the above remarks, applicants respectfully choose to maintain claims 10 and 11 in their dependent form.

In view of the foregoing, this application is in condition for allowance. Applicants request that the Examiner withdraw the outstanding objections and rejections and issue a Notice of Allowance.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **424662010500**.

Respectfully submitted,

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